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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,792	03/03/2004	Sang-cheol Ko	102-1019	4382

38209 7590 03/28/2006
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EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT PAPER NUMBER

1725

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/790,792		KO ET AL.	
	Examiner		Art Unit	
	M. Alexandra Elve		1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-22 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/3/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 7 & 15 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims cannot be further treated on the merits.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 9 & 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richerzhagen (USPN 5,902,499) in view of Yamamoto et al. (USPN 5,482,660).

Richerzhagen discloses a laser and liquid jet for material machining. The system has a processing module (housing) and the workpiece is cut using the laser-liquid jet device. Nd:YAG lasers may be used. Pressures range from about 10 bars to 1000 bars. Nozzles are sizes from 5 to 50um. A conical shape may be used for focusing.

Richerzhagen does not teach the presence of a wafer, or a stage.

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Yamamoto et al. discloses the fabrication of an ink jet head. Side and top-down jets are taught. An excimer laser beam is irradiation on the discharge port face and the stage is moved with the substrate thereon. The substrate may be made of glass, quartz and ceramic.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a stage and a wafer, as taught by Yamamoto et al. in the Richerzhagen process because the stage enhance versatility during fabrication and the use of a wafer is merely a design choice.

Although the exact pressures and sizes are not taught they are closely approximating or overlapping. It is well settled that where patentability is predicated upon a change in a condition of prior art process, such as pressure or hole size, the change must be at least "critical", that is, it must lead to a new and unexpected result. The applicant has the burden of providing such criticality. Note *In re Aller* et al. 105 USPQ 223.

Claims 8 & 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richerzhagen and Yamamoto et al., as stated in the above paragraph and further in view of Hashimoto et al. (USPAP 2004/0246292).

Richerzhagen and Yamamoto et al. do not teach dicing of a wafer.

Hashimoto et al. discloses separation of a silicon wafer in the manufacturing of an ink jet head. It would have been obvious to one of ordinary skill in the art at the time of the invention to dice a wafer, as taught by Hashimoto et al. in the Richerzhagen and

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Yamamoto et al. system because it is merely a specific type of laser and liquid jet material machining.

Allowable Subject Matter

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach the use of two types of laser simultaneously.

Conclusion

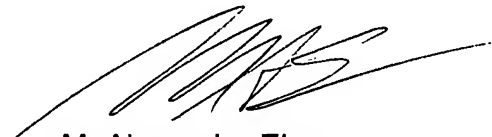
Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 6:30-3:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 18, 2006.

A handwritten signature in black ink, appearing to read 'M. Elve', with a long horizontal flourish extending to the right.

M. Alexandra Elve
Primary Examiner 1725